in all parts of Australia. Each species will be illustrated from drawings by the best bird-artists available, and the plates will be carefully hand-colored.

An examination of Part I shows that the character of the work as announced in the prospectus has been well sustained. Of the plates, it is enough to say that with one exception, all have been drawn by J. G. Keulemans, and the text is well up to date. The bibliographical references are reasonably complete and the nomenclature modern; there are keys to the genera and species, and the descriptions (in small type) are very full, including those of the downy chick (when known), as well as of immature and fully adult birds, and of the nest and eggs. This is followed (in larger type) by the general account of the species, including its literary as well as its life history, with copious extracts from standard authorities. The account of the Emu thus occupies ten pages, and that of the Mallee Fowl twelve pages, while a couple of pages suffices to tell the little that is known of several of the species of *Turnix*, or so-called quails, the life histories of which are still almost unknown.

Mr. Mathews seems to be well prepared for his great task, having lived all his life in Australia and been a devoted student of its avifauna. In 1908 he published a 'Hand-list of the Birds of Australia' as a preliminary to the present illustrated work, and is in touch with a large number of field ornithologists in various parts of Australia from whom he is constantly receiving valuable observations hitherto unpublished. He also has the hearty co-operation of Dr. Ernst Hartert of the Rothschild Museum at Tring, who will render important aid in the technical and historical aspects of the work.

The illustrations, it is announced, will be by H. Grönvold, J. G. Keulemans, E. E. Lodge, and other noted bird draughtsmen. The part now under notice is a guaranty of the excellent character of the work, and we wish the author every support and the success this immense undertaking surely deserves.— J. A. A.

Bird Enemies of the Texas-fever Tick and other Ticks.— Mr. Robert Newstead of Chester, England, who has made numerous specific, hence valuable contributions to economic ornithology, maintains his satisfying standard in some observations[1] on the enemies of Ticks in Jamaica. While Gosse,[2] Taylor,[3] Ober,[4] and others record the fact that the Tinkling Grackle (*Quiscalus crassirostris*), and the Parrot-billed Blackbird (*Crotophaga ani*) feed upon cattle ticks, with the exception of Ober, they content themselves with evidence derived from the testimony of others or from merely watching the birds. Newstead, however, by means of post mortems gives us definite information regarding the species and the numbers of ticks eaten. He briefly treats other items of food also.

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[1] Bull. Jamaica Dept. Agr., Vol. I, No. 3, 1910, pp. 161–165.
[2] Birds of Jamaica, 1847, pp. 284–285.
[3] Auk, IX, 1892, pp. 369–370.
[4] Proc. U. S. Nat. Mus., (1878) 1879, p. 193.

The contents of the stomachs of 6 Tinkling Grackles were analyzed by him; they contained ticks as follows: No. 1, 25 Texas-fever ticks (*Margaropus annulatus australis*) and 3 silver ticks (*Amblyomma cajanense*); No. 2, 74 Texas fever ticks; No. 3, 13 Texas-fever ticks; No. 4, 32 *Margaropus*; No. 5, 3 *Amblyomma* and 2 *Margaropus*; and No. 6, 7 *Margaropus*. The total number of ticks found in the 6 birds was 159. Newstead remarks that "as these were all females, it will be seen that had they been left to mature, that they would have produced between them over 1,000,000 eggs, or a corresponding number of young grass lice, so that the value of the Tinkling as a tick destroyer cannot be overestimated."

On several occasions the Parrot-billed Blackbirds or Anis were seen to take ticks (probably *Amblyomma cajanense*) from the heads of horses, and one Texas-fever tick was found in each of two collected stomachs of this species.[1] Domestic fowls also are said to feed on the cattle ticks to a marked extent.

Birds closely related to the Jamaican species above mentioned, namely the Groove-billed Ani (*Crotophaga sulcirostris*) and the Red-winged Blackbird (*Agelaius phœniceus*) are said [2] to prey upon Texas-fever ticks in Mexico. In Costa Rica also, according to Cherrie,[2] the Groove-billed Ani habitually feeds upon cattle-ticks. The habit is so marked in fact that they are called garrapateros in all Spanish American countries. Tick bird is in use in the West Indies and even the scientific name of the genus has reference to their obvious taste for ticks.

In the United States, Jackdaws (*Megaquiscalus major macrourus*) and Kingbirds (*Tyrannus tyrannus*) are recorded [4] as enemies of Texas-fever ticks. Mr. H. S. Barber informs me that he observed Red-eyed Cowbirds (*Tangavius æneus involucratus*), Boat-tailed Grackles and another species of Blackbird habitually attending cattle near Brownsville, Texas, and securing ticks by springing up from the ground and pulling them from the bellies of the animals. Sometimes the birds failed to get the ticks, but left their torn bodies attached to the skin. It was a matter of common knowledge that these bloody remains offered a favorable and oft used place for deposition of the eggs of the screw-worm fly (*Chrysomyia macellaria*). It is very doubtful, however, that any considerable proportion of screw-worm infestation takes place in this way. Eastern Cowbirds (*Molothrus ater*) also are said by Bendire [5] to eat ticks.

In the course of stomach examinations by the Biological Survey, the

[1] The contents of all the stomachs here noted, as well as those of one bird of each species which had not eaten ticks, are very fully determined, and the economic relations of the various items given. Brief notes on the food of four other species of birds also are presented. They refer to *Centurus radiolatus*, *Platypsaris niger*, *Todus viridis* and *Tyrannus caudifasciatus*.

[2] Moreau, P. L. Circ. Num. 66, Com. de Parasit. Agr. Mex., 1907, figs. 8–9.

[3] Auk, IX, 1892, p. 325.

[4] Hunter, W. D. and Hooker, W. A. Bull. 72, U. S. Bureau Ent., 1907, p. 37.

[5] Life Histories of N. A. Birds, Part II, 1895, p. 435.

following birds have been found to eat ticks; those eating Texas-fever ticks are: Killdeer (*Oxyechus vociferus*), Upland Plover (*Bartramia longicauda*), and Meadowlark (*Sturnella magna*); net ticks (*Dermacentor occidentalis*): Dwarf Hermit Thrush (*Hylocichla guttata nana*); castor-bean ticks (*Ixodes* sp.): Boat-tailed Grackle (*Megaquiscalus major*), Meadowlark, and House Wren (*Troglodytes aëdon*); and *Gamasus* sp.: the Wren-tit (*Chamæa fasciata*).— W. L. McA.

Economic Ornithology in recent Entomological Publications.— The greater prominence given to bird enemies of insect pests in recent entomological publications is a source of gratification to bird lovers. Increased recognition of the services of birds is common to both State and Federal entomological organizations, and in recent bulletins of the U. S. Bureau of Entomology, in particular, comment on the relations of birds to the insects discussed is seldom lacking.

Four papers on cereal and forage insects issued by the Bureau of Entomology during the present year include notes on birds in the discussion of natural checks of the insects treated. Fourteen species of birds, which the Biological Survey has found to feed on the clover-root curculio (*Sitones hispidulus*) are listed in Mr. V. L. Wildermuth's bulletin [1] on that beetle, and the statement is made that "natural enemies, such as fungous disease and birds, have without a doubt contributed largely towards holding the insects in check."

The clover-root curculio belongs to a genus of beetles closely related in appearance and habits, which do a large amount of obscure damage, principally to clover. Few genera of beetles occur more frequently in bird stomachs than *Sitones*. Six species are known to be eaten and *Sitones* unidentified as to species have been found in the stomachs of 49 species of birds. On account of the present more complete indexing of Biological Survey records ten species can be added to the list of 14 Wildermuth gives as enemies of *S. hispidulus*. The complete list is: Upland Plover, Killdeer, Ruffed Grouse, Broad-winged Hawk, Flicker, Nighthawk, Chimney Swift, Wood Pewee, Crow Blackbird, Meadowlark, Lincoln Finch, Song Sparrow, Chipping Sparrow, White-throated Sparrow, Purple Martin, Barn, Tree and Bank Swallows, Northern Water-Thrush, Catbird, Chickadee, Hermit Thrush, Robin and Western Bluebird.

The English Sparrow comes in for condemnation along with an insect pest in an article [2] by W. Harper Dean on the sorghum midge (*Contarina sorghicola*). Both the bird and the insect curtail the number of sound mature seed produced, so that in parts of many sorghum-growing States a profitable crop cannot be secured. The work of the sparrow is much less important than that of the fly. Sorghum heads partly destroyed by

[1] Bull. 85, Part 3, Bur. Ent., March, 1910, p. 37.
[2] Bull. 85, Pt. 4, Bur. Ent., May, 1910, pp. 39–40.